

What is claimed is:

1. An isolated nucleic acid that is expressed by human colon cancer cells comprising:

- 5 (i) the nucleotide sequence of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13 and 15;
- (ii) a variant of (i), wherein said variant has a nucleotide sequence that is at least 70% identical to the sequence of (i) when aligned without allowing for gaps; or
- 10 (iii) a fragment of (i) or (ii) having a size of at least 20 nucleotides in length.

2. The isolated nucleic acid of claim 1 which comprises the nucleotide sequence of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13 and 15, or a fragment thereof.

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3. A primer mixture comprising primers that result in the specific amplification of any one of the nucleic acids identified in claim 1.

20 4. A method of detecting colon cancer comprising (i) obtaining a human colon cell sample; and (ii) determining whether such cell sample expresses a colon cancer gene having a nucleotide sequence of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 36, 37, 39, 41, 42, 44, 46, 47, 48, 49, 51, 52, 54, 56, or 57.

25 5. The method of claim 4, wherein said method comprises detecting the expression of said colon cancer gene using a nucleic acid that specifically hybridizes thereto.

6. The method of claim 4, wherein said method comprises detecting the expression of said colon cancer gene using primers that result in the amplification thereof.

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7. The method of claim 4, wherein the expression of said colon cancer gene is detected by performing an assay to detect the presence or level of the antigen encoded by said gene.

5 8. The method of claim 7, wherein said assay involves the use of a monoclonal antibody or fragment that specifically binds to said antigen.

9. The method of claim 8, wherein said assay comprises an ELISA or competitive binding assay.

10 10. An antigen expressed by human colon cancer cells comprising:

- 15 (i) an antigen encoded by the nucleic acid of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 36, 37, 39, 41, 42, 44, 46, 47, 48, 49, 51, 52, 54, 56, or 57;
- (ii) an antigen having the amino acid sequence of any one of SEQ ID NO. 5, 7, 9, 11, 14, 16, 25, 32, 35, 38, 40, 43, 45, 50, 53, 55, or 58; or
- (iii) a fragment or variant of (i) or (ii), wherein said fragment or variant specifically binds the antigen of (i) or (ii).

20 11. A colon antigen encoded by the nucleic acid of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 36, 37, 39, 41, 42, 44, 46, 47, 48, 49, 51, 52, 54, 56, or 57.

25 12. A monoclonal antibody or antigen-binding fragment thereof that specifically binds to a colon antigen of claim 11.

13. The antigen of claim 11, further comprising a detectable label, wherein the detectable label is attached directly or indirectly to the antigen.

30 14. A colon antigen comprising the amino acid sequence of any one of SEQ ID NO. 5, 7, 9, 11, 14, 16, 25, 32, 35, 38, 40, 43, 45, 50, 53, 55, or 58.

15. A monoclonal antibody or antigen-binding fragment thereof that specifically binds to a colon antigen of claim 14.

16. The antigen of claim 14, further comprising a detectable label, wherein the detectable label is attached directly or indirectly to the antigen.

17. A diagnostic kit for detecting colon cancer which comprises a DNA according to claim 1 and a detectable label.

18. A diagnostic kit for detection of colon cancer which comprises primers according to claim 3 and a diagnostically acceptable carrier.

19. A diagnostic kit for detection of colon cancer which comprises a monoclonal antibody according to claim 12.

20. A diagnostic kit for detection of colon cancer which comprises a monoclonal antibody according to claim 15.

21. A method for treating colon cancer which comprises administering a therapeutically effective amount of a ribozyme or antisense oligonucleotide that inhibits the expression of a gene having a DNA sequence of any one of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 36, 37, 39, 41, 42, 44, 46, 47, 48, 49, 51, 52, 54, 56, or 57, or fragment or variant thereof.

22. A method for treating colon cancer in a subject, which comprises administering to said subject a ligand that specifically binds to a nucleic acid molecule comprising a nucleotide sequence of any one of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 36, 37, 39, 41, 42, 44, 46, 47, 48, 49, 51, 52, 54, 56, or 57, or fragment or variant thereof.

23. The method of claim 22, wherein said ligand further comprises and effector moiety.

24. The method of claim 23, wherein said effector moiety is a therapeutic radiolabel, enzyme, cytotoxin, growth factor, or drug.

5 25. A method for treating colon cancer comprising administering a therapeutically effective amount of:

- (a) a colon antigen encoded by the nucleic acid of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 36, 37, 39, 41, 42, 44, 46, 47, 48, 49, 51, 52, 54, 56, or 57;
10 and
(b) an adjuvant, to thereby elicit a humoral or cytotoxic T-lymphocyte response to said antigen.

15 26. A method for treating colon cancer comprising administering a therapeutically effective amount of:

- (a) a colon antigen comprising the amino acid sequence of any one of SEQ ID NO. 5, 7, 9, 11, 14, 16, 25, 32, 35, 38, 40, 43, 45, 50, 53, 55, or 58;
and
(b) an adjuvant, to thereby elicit a humoral or cytotoxic T-lymphocyte
20 response to said antigen.

27. A method for treating colon cancer comprising administering a therapeutically effective amount of a ligand which specifically binds to a protein encoded by a gene which includes the nucleic acid of any one of SEQ ID NOs: 2, 4, 6, 8, 10, 13, 15, 17, 18, 19, 20, 21,
25 22, 23, 24, 26, 27, 28, 29, 30, 31, 34, 36, 37, 39, 41, 42, 44, 46, 47, 48, 49, 51, 52, 54, 56, or 57.

28. The method of claim 27, wherein said ligand further comprises and effector moiety.

30 29. The method of claim 28, wherein said effector moiety is a therapeutic radiolabel, enzyme, cytotoxin, growth factor, or drug.

30. The method of claim 28, wherein said effector moiety is a radiolabel, enzyme, cytotoxin, growth factor, or drug.

5 31. The method of claim 30 wherein the radiolabel is ⁹⁰yttrium.

32. The method of claim 31 wherein the radiolabel is ¹¹¹indium.

10 33. The method of claim 27 wherein said ligand is a monoclonal antibody or fragment thereof.

34. The method of claim 27 wherein said ligand is a small molecule.

35. The method of claim 27 wherein said ligand is a peptide.

15 36. The method of claim 1, wherein the isolated nucleic acid comprises the nucleotide sequence of SEQ ID NO:2.

20 37. The method of claim 1, wherein the isolated nucleic acid comprises the nucleotide sequence of SEQ ID NO:4.

38. The method of claim 1, wherein the isolated nucleic acid comprises the nucleotide sequence of SEQ ID NO:6.

25 39. The method of claim 1, wherein the isolated nucleic acid comprises the nucleotide sequence of SEQ ID NO:8.

40. The method of claim 1, wherein the isolated nucleic acid comprises the nucleotide sequence of SEQ ID NO:10.

30 41. The method of claim 1, wherein the isolated nucleic acid comprises the nucleotide sequence of SEQ ID NO:13.

42. The method of claim 1, wherein the isolated nucleic acid comprises the nucleotide sequence of SEQ ID NO:15.